

CLAIMS

What is claimed is:

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1. A source coupling system for an optical waveguide illumination system, comprising:
 - a source channel;
 - a cavity formed in the source optical channel;
 - a light source disposed inside the cavity; and
 - a light driving circuit operatively connected to the light source;whereby light from the light source is substantially contained within the optical channel.
 2. The source coupling system of Claim 1, wherein the source optical channel is made of quartz, glass, or plastic.
 3. The source coupling system of Claim 1, wherein the light source is a high-density discharge ^(HID) ~~(HID)~~ light source.
 4. The source coupling system of Claim 3, wherein the HID light source is an electrodeless light source.
 5. The source coupling system of Claim 3, wherein the HID light source is a mercury light source, a metal halide source, a high-pressure sodium lamp, a xenon lamp, or a sulfur lamp.
 6. The source coupling system of Claim 3 wherein the ^{Source} ~~λ~~ optical channel is formed of a material which is stable in the presence of high temperatures generated by the HID light source.
 7. The source coupling system of Claim 1, wherein the cavity is a spherical cavity.
 8. The source coupling system of Claim 1, wherein the cavity is an elliptical cavity.
 9. The source coupling system of Claim 1, wherein the light source driving circuitry includes an induction system.

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10. The source coupling system of Claim 9, wherein the light source driving circuitry includes a ballast connected to the induction system to limit the current through the induction system and the temperature of ^{the} light source to pre-selected levels.

11. The source coupling system of Claim 1, wherein the cavity is shaped to produce an anisotropic distribution of source light to increase the amount of light that is ^{Source} totally internally reflected in the optical channel.

12. The source coupling system of Claim 1, wherein the ^{Source} optical channel is shaped to increase the amount of light that is totally internally reflected in the ^{Source} optical channel.

13. The source coupling system of Claim 1, wherein the source optical channel is a portion of a light distribution waveguide.

14. The source coupling system of Claim 1, wherein the source optical channel is a discrete component to which light distribution waveguides are coupled.

15. The source coupling system of Claim 1, wherein the source optical channel has two arms extending from the cavity.

16. The source coupling system of Claim 1, wherein the source optical ^{Channel} chamber has four arms extending from the cavity.

17. An optical waveguide illumination system, comprising:
a source coupling system of Claim 1;
a plurality of light distribution waveguides extending from the source coupling illumination system to illumination points.

18. The optical ^{Waveguide} illumination system of Claim 17 wherein the light distribution waveguides are multichannel waveguides comprising a bundle of separate waveguides.

19. An optical waveguide illumination system, comprising:
a source coupling system of Claim 14;
a plurality of light distribution waveguides extending from the source coupling system to illumination points.

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20. The optical waveguide illumination system of Claim 19 wherein the light distribution waveguides are multichannel waveguides comprising a bundle of separate waveguides.

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